

**CLAIMS**

What is claimed is:

5           1.    A film cassette comprising:

          a first section and a second section, wherein said first  
section and said second section comprise tissue-equivalent  
material, and wherein said cassette further comprises at least  
one lead foil sheet carried within said first section and at  
10   least one lead foil sheet carried within said second section.

          2.    The film cassette of claim 1, wherein said first  
section and said second section are generally prismaticly  
shaped.

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          3.    The film cassette of claim 1, wherein said first  
section and said second section are fabricated of a plastic  
material.

20           4.    The film cassette of claim 3, wherein said plastic  
material is a water-equivalent plastic.

5. The film cassette of claim 1, wherein said first section and said second section can retain a sheet of film therebetween.

5 6. The film cassette of claim 5, wherein said lead foil sheets are carried within said first and second sections at a distance of approximately 6 millimeters from the position of the sheet of film as retained therein.

10 7. The film cassette of claim 1, wherein said first section and said second section are hingably related.

8. A medical phantom comprising:

a film cassette comprising a first section and a second  
15 section, wherein said first section and said second section comprise tissue-equivalent material, and wherein said cassette further comprises at least one lead foil sheet carried within said first section and at least one lead foil sheet carried within said second section, and wherein said first section and  
20 said second section have outer surface sides, film;

at least one slab of tissue-equivalent material positioned proximate said outer surface side of said first section; and

and at least one slab of tissue-equivalent material positioned proximate said outer surface side of said second section.

5           9. The medical phantom of claim 8, wherein said slabs comprise water-equivalent plastic.

10           10. A holder for a medical phantom comprising:  
a container, wherein said container comprises bottom,  
10 first side, second side, front and back, wherein said bottom, said first side, said second side, said front and said back comprise a clear plastic material.

15           11. The holder for a medical phantom of claim 10, further comprising legs.

12. The holder for a medical phantom of claim 11, wherein said legs further comprise means for adjusting the length thereof.

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13. A medical phantom comprising:  
at least one high atomic number powder; and  
a tissue-equivalent plastic compound.

14. The medical phantom of claim 13, wherein said at least one high atomic number powder comprises at least one element selected from Group VI of The Periodic Table of the  
5 Elements.

15. The medical phantom of claim 13, wherein said at least one high atomic number powder comprises at least one element selected from the group consisting of lead and  
10 tungsten.

16. The medical phantom of claim 13, having a concentration of said at least one high atomic number powder comprising approximately 6% by weight.  
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17. The medical phantom of claim 13, having a concentration of said tissue-equivalent plastic compound comprising approximately 94% by weight.

20 18. The medical phantom of claim 13, comprising approximately 80.5% carbon by weight and approximately 13.5% hydrogen by weight.

19. A method of verifying intensity of radiation beams intended for patient treatment, wherein said radiation beams comprise beam components, said method comprising the steps of:

a. obtaining a phantom for mimicking human tissue,  
5 wherein said phantom has a generally flat surface, and wherein said phantom comprises a film cassette comprising a first section and a second section, wherein said first section and said second section comprise tissue-equivalent material, and wherein said cassette further comprises at least one lead foil  
10 sheet carried within said first section and at least one lead foil sheet carried within said second section, and wherein said first section and said second section have outer surface sides; film; at least one slab of tissue-equivalent material positioned proximate said outer surface side of said first  
15 section; and at least one slab of tissue-equivalent material positioned proximate said outer surface side of said second section;

b. computationally delivering said radiation beams intended for patient treatment on said phantom;

20 c. calculating dose distributions at a specific depth below the surface of said phantom for each of said beam components;

d. setting up radiation beams for actual delivery on said phantom, wherein said phantom houses radiographic film.

e. delivering actual radiation beams intended for patient treatment on said flat phantom, whereby images are  
5 generated on the film;

f. converting said images into equivalent actual dose distributions; and

g. comparing said actual dose distributions with said calculated dose distributions.

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20. The method of claim 19, wherein said phantom is contained within a cassette.

21. The method of claim 19, further comprising the step  
15 of:

determining whether the differences between said actual dose distributions and said calculated dose distributions are within acceptable levels.

20 22. The method of claim 19, further comprising the step of:

treating a patient using a verified beam.

23. The method of claim 22, wherein said verified beam is delivered via a medical linear accelerator.

24. A method of verifying intensity of radiation beams intended for patient treatment, wherein said radiation beams comprise beam components, said method comprising the steps of:

a. obtaining a phantom for mimicking human tissue, wherein said phantom has a generally flat surface, and wherein said phantom comprises at least one high atomic number powder and at least one tissue-equivalent plastic compound;

b. computationally delivering said radiation beams intended for patient treatment on said phantom;

c. calculating dose distributions at a specific depth below the surface of said phantom for each of said beam components;

d. setting up radiation beams for actual delivery on said phantom, wherein said phantom houses radiographic film.

e. delivering actual radiation beams intended for patient treatment on said flat phantom, whereby images are generated on the film;

f. converting said images into equivalent actual dose distributions; and

g. comparing said actual dose distributions with said calculated dose distributions.

5        25. A method of exposing film in an x-ray machine comprising the steps of:

        a. inserting film between layers of tissue-mimicking material to form a sandwich;

        b. placing said sandwich in a holding device comprising  
10        a chamber, a compression mechanism and legs, wherein said legs have a height adjusting mechanism;

        c. inserting said holding device into an x-ray machine;

        d. adjusting the height of said holding device via said height adjusting mechanism; and

15        e. exposing said film to radiation from the x-ray machine.